

# PATENT SPECIFICATION

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**702,781**



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## COMPLETE SPECIFICATION

### An Improved Check-Strap for Vehicle Doors and like Closure Members

We, **PRESSED STEEL COMPANY LIMITED**, a British Company, of Cowley in the City and County of Oxford, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to door and like checks and concerns particularly a so-called check-strap device for vehicle doors. It is applicable equally well to vehicle bonnets and trunk lids or other closure members.

It is desirable, with vehicle doors, not only to limit the degree of opening but also to hold or restrain the door in the open position so that it cannot swing freely to the closed position, yet can be closed readily on the application of a small force thereto.

There have been many proposals for this purpose and the object of the invention is to provide an improved check-strap of simple design and cheap construction which requires very little or no maintenance, which can be fitted easily even on narrow width doors and which will hold the door or other closure member positively in the open position.

According to the present invention, a door check-strap comprises a check arm pivoted at one end to the door post or a part projecting therefrom and at the other end to a lever itself pivoted within or on the door, a tension spring anchored at one end to the pivotal point of the arm on or near the post and at the other end to a point on the lever displaced laterally of the pivot of the arm and lever.

The spring is anchored at one end to the door pivot on the post and thus the total extension of the spring is reduced with a consequent reduction in the number of coils thereof.

The lever may be in the form of a V-bar, the apex of which is pivoted on or within the door, the end of the one limb being pivoted to the check arm and the end of the other limb being coupled to the spring. Alternatively the lever may be in the form of a triangular

plate, the apex being pivoted to the door and the angles at the base being pivoted to the check arm and coupled to the spring respectively.

The invention is illustrated in the accompanying drawings of which Figure 1 is a somewhat diagrammatic view of the linkage attached to the door and the post showing the disposition of the link in the closed position and Figure 2 is a similar view with the door in the open position.

The door post is shown in phantom lines at 11 and the door at 12. On a bracket 13, secured to the post 11 is pivotally mounted a check arm 14, the opposite end of which is pivoted as at 21 to a link 15, itself pivoted as at 16 to the door and formed integrally with a second link 17 to the end 22 of which is anchored a coiled spring 18, anchored at its other end to the pivot on the bracket 13. The links 15 and 17 forming a V-bar lever may be constituted by a triangular plate indicated at 20.

In the closed position shown in Figure 1, the axis of the spring 18 is on the side of the pivot 16 to force the door to the closed position. When opening the door a pull is required to overcome this force. As will be seen clearly from Figure 2, in opening, the pivot 16 swings on the line *a* whilst the outer pivot 21 of the link 15 swings on the line *b* in which position, the spring 18 now acts to hold the door in the open position, the triangulation represented by 20 having rotated through approximately 180°.

Thus the door is held by the spring in both the closed and the open positions and a force is required to move it from either of said positions i.e. from open to closed or from closed to open.

In order to prevent the check arm 14 and lever 20 from passing beyond dead centre and thereby more or less locking the door in the open position, an adjustable stop may be provided within the door to prevent the pivot of the arm and lever from moving too far. As the arm and lever approach dead centre the

mechanical advantage of the linkage system  
nears infinity, so that with the stop a con-  
siderable door holding force is attained with  
a relatively light spring. By making the stop  
5 in the form of a screwed stud, the checking  
action may be very readily adjusted.

Even should the spring break in use, the  
movements of the door will in no way be  
impeded, and lack of lubrication of the system  
10 will have no deleterious effects nor will  
undesirable squeaks be set up.

What we claim is:—

1. A check strap for vehicle doors and like  
closure members comprising a check arm  
15 pivoted at one end on the door post or a part  
projecting therefrom and at the other end on  
a lever itself pivoted within or on the door, a  
tension spring anchored at one end to the  
pivotal point of the arm on or near the post

and at the other end to a point on the lever 20  
displaced laterally of the pivot of the arm and  
lever.

2. A check strap for vehicle doors and like  
closure members as claimed in Claim 1 in  
which the lever pivoted within or on the door 25  
is in the form of a V-bar, a triangulated plate  
or the like having one corner pivoted on or  
within the door post, one corner pivoted to the  
check arm and the other corner anchored to  
the tension spring. 30

3. A check strap for vehicle doors and like  
closure members, constructed and arranged  
substantially as hereinbefore described with  
reference to the accompanying drawings.

T. M. CONNELLY,  
Chartered Patent Agent,  
Agent for the Applicants.

#### PROVISIONAL SPECIFICATION

### An Improved Check-Strap for Vehicle Doors and like Closure Members

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a British Company, of Cowley in the City  
and County of Oxford, do hereby declare  
this invention to be described in the follow-  
ing statement:—

40 This invention relates to door and like  
checks and concerns particularly a so-called  
check-strap device for vehicle doors. It is  
applicable equally well to vehicle bonnets and  
trunk lids or other closure members.

45 It is desirable, with vehicle doors, not only  
to limit the degree of opening but also to hold  
or restrain the door in the open position, so  
that it cannot swing freely to the closed posi-  
tion, yet can be closed readily on the applica-  
50 tion of a small force thereto.

There have been many proposals for this  
purpose and the object of the invention is to  
provide an improved check-strap of simple  
design and cheap construction; which  
55 requires very little or no maintenance, which  
can be fitted easily even on narrow width  
doors and which will hold the door or other  
closure member positively in the open position.

According to the present invention, a door  
60 check strap comprises a check arm pivoted at  
one end to the door post or a part projecting  
therefrom and at the other end to a lever  
itself pivoted within or on the door, a spring  
being secured between the pivotal point of the  
65 arm on or near the post and a point on the  
lever displaced laterally of the pivot of the  
arm and lever.

The spring is pivoted at one end to the door  
pivot on the post and thus the total extension  
70 of the spring is reduced with a consequent  
reduction in the number of coils thereof.

The lever may be in the form of a V-bar,  
the apex of which is pivoted on or within the  
door, the end of the one limb being pivoted  
to the check arm and the end of the other 75  
limb being coupled to the spring. Alternatively  
the lever may be in the form of a triangular  
plate, the apex being pivoted to the door and  
the angles at the base being pivoted to the  
check arm and coupled to the spring respec- 80  
tively.

With the door in the closed position the  
lever is arranged at an acute angle to the check  
arm but, as the door is opened they move  
nearly into line and the spring acting on the 85  
displaced point tends to maintain them in line.

In order to prevent the check arm and lever  
from passing beyond dead centre and thereby  
more or less locking the door in the open  
position an adjustable stop may be provided 90  
within the door to prevent the pivot of the  
arm and lever from moving too far. As the  
arm and lever approach dead centre the  
mechanical advantage of the linkage system  
nears infinity, so that with the stop, a con- 95  
siderable door holding force is attained with a  
relatively light spring. By making the stop in  
the form of a screwed stud, the checking action  
may be very readily adjusted.

Even should the spring break in use, the 100  
movements of the door will in no way be im-  
peded, and lack of lubrication of the system  
will have no deleterious effects nor will un-  
desirable squeaks be set up.

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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of  
the Original on a reduced scale.

